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10/579,066

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Masanao Kamijo

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SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

BERNSHTEYN, MICHAEL

ART UNIT

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1796

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,066	<b>Applicant(s)</b> KAMIJO ET AL.	
	<b>Examiner</b> MICHAEL M. BERNSHTEYN	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/11/2006</u> .                                              | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1-5 and 7-14 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Seko et al. (U. S. Patent 5,002,977).

With regard to the limitations of claims 1-3, 7 and 8, Seko discloses an unsaturated resin composition curable with an active energy ray, comprising a reaction product between an acid group-containing vinylic resin and an alicyclic epoxy group-containing unsaturated compound; and an unsaturated resin composition curable with an active energy ray, comprising a reaction product between an alicyclic epoxy group-containing vinylic resin and an acid group-containing unsaturated compound (abstract, col. 1, lines 31-35).

Seko discloses that examples of the ethylenically unsaturated acid that can be used in this reaction are (meth)acrylic acid and crotonic acid; carboxyalkyl (meth)acrylates such as 2-carboxyethyl (meth)acrylate or 2-carboxypropyl (meth)acrylate; and maleic acid, maleic anhydride and itaconic acid. Of these, **(meth)acrylic acid**, 2-carboxyethyl (meth)acrylate and 2-carboxypropyl (meth)acrylate are preferred (col. 1, lines 47-55). An unsaturated group is introduced into the resulting acid group-containing vinylic resin by utilizing the reaction between the acid group of the

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resin with the epoxy groups in the alicyclic epoxy group-containing unsaturated compound (col. 2, lines 49-53).

With regard to the limitations of claim 1, Seko does not disclose a polymer compound whose side chain has a structure represented by the formula (I).

However, in view of substantially identical polymer compound having the same main chain comprising a copolymer of (meth) acrylic acid and styrene, a method of preparing the polymer compound with the usage of substantially identical monomer ingredients, initiators, catalyst and polyfunctional thiol compounds between Seko and instant claims, it is the examiner position that Seko's polymer compound comprises the side chain which inherently has the structure represented by formula (I). Since the USPTO does not have equipment to do the analytical test, the burden is now shifted to the applicant to prove otherwise. **In re Fitzgerald** 619 F 2d 67, 70, 205 USPQ 594, 596 (CCPA 1980).

Even assuming that the claims are not anticipated by the reference, it would have been obvious to one of ordinary skill in the art to make the polymer having the structure of the side chain being represented by the claimed formula (I) using the claimed process because it appears that the reference generically embrace the claimed subject matter and the person of ordinary skill in the art would have expected all embodiments of the reference to work. Applicants have not demonstrated that the differences, if any, between the claimed subject matter and the subject matter of the prior art examples give rise to unexpected products.

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With regard to the limitations of claims 4 and 5, Seko exemplifies that a mixture composed of 30 parts of **styrene**, 35 parts of butyl acrylate, 35 parts of **acrylic acid** and 3 parts of **azobisisolutyronitrile** was added dropwise over 3 hours to 90 parts of Cellosolve in a reactor maintained at 120<sup>0</sup>C in an atmosphere of nitrogen gas. After the addition, the mixture was aged for 1 hour, and a mixture of 1 part of azobisdimethylvaleronitrile and 10 parts of Cellosolve was added dropwise over 1 hour, and the mixture was further aged for 5 hours to give a solution of an acrylic resin having a high acid value (260) (Synthesis example 1, col. 11, lines 20-45).

The unsaturated group-containing resin may also be used as a solution in a polymerizable vinyl monomer to be described hereinafter. The concentration of the unsaturated group-containing resin in the composition is not critical, and may be varied over a wide range depending upon the type or state of the resin. Its suitable solids concentration is generally 1 to 99 % by weight, preferably 5 to 90 % by weight. According to another embodiment, the unsaturated group-containing resin may be a reaction product of an alicyclic epoxy group-containing vinylic resin with an acid group-containing unsaturated compound. The alicyclic epoxy group-containing vinylic resin includes copolymers obtained by copolymerizing at least one of alicyclic epoxy group-containing unsaturated monomers of formulae (I) to (XV) as an essential monomer component with the same monomer as mentioned with regard to the production of the acid group-containing vinylic resin, for example at least one monomer selected from (meth)acrylic acid esters, vinyl aromatic compounds, amide-type vinyl compounds,

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polyolefinic compounds and other monomers by the same method as described hereinabove (col. 7, lines 5-30).

With regard to the limitations of claims 9 and 10, Seko discloses that when the resin composition is to be cured by ultraviolet irradiation, a **photopolymerization initiator** is usually incorporated in the composition. Typical examples of the photopolymerization initiator that can be added include benzoin, benzoin methyl ether, benzoin ethyl ether, benzoin n-propyl ether, benzoin n-butyl ether, benzophenone, etc. (col. 10, lines 3-14).

With regard to the limitations of claims 5, 6, 11 and 12, Seko discloses that to accelerate the photopolymerization reaction by the above photopolymerization initiator, a photopolymerization accelerator may also be used in combination. Typical examples of the photopolymerization accelerator include **tertiary amines** such as triethymamine, triethanolamine and 2-dimethylaminoethanol; **phosphines** typified by **triphenyl phosphine**; and **thiols** typified by **beta-thioglycol**. Generally, the photopolymerization accelerator may be used in a proportion of 5 to 200 parts by weight, preferably 20 to 100 parts by weight, per 100 parts by weight of the photopolymerization initiator (col. 10, lines 22-32).

With regard to the limitations of claims 13 and 14, Seko discloses that the method of forming a film from the resin composition differs depending upon whether the composition is of water-base or organic solvent-base. Generally, the composition is coated on a substrate, such as wood, paper, an inorganic material, plastics and metals (zinc, iron, copper, aluminum), buy a coating machine such as a natural roll coater, a

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reverse roll coater, a gravure roll coater, a screen printing machine, a curtain coater, an air sprayer, an airless sprayer, a bar coater, a knife coater, a spin coater, a brush, an electrodeposition coater or a dip coated. Where appropriate, water, the solvent, etc. are removed by drying. Then, an active energy ray such as an electron beam or ultraviolet ray is irradiated on the coated film to cure it. The dry film thickness is generally not more than 2,000 micrometers, preferably 1 to 1,000 micrometers, more preferably 2 to 500 micrometers (col. 9, lines 28-44).

After the electrodeposition, the coated base board is pulled up from the bath and washed with water, and then water on the surface of the electrodeposited film is removed by hot air or otherwise. A pattern mask (photographic negative) is put on the resulting photosensitive electrodeposited film and an actinic light ray such as an ultraviolet ray is irradiated on a conductor circuit (circuit pattern) (col. 10, lines 53-60).

The unexposed portion of the film is removed by a developing treatment with an aqueous alkaline solution or the like. The developing treatment is carried out by spraying weak alkaline water onto the film surface and thus washing away the unexposed portion of the film. The weak alkaline water may usually be an aqueous solution having a pH of 8 to 10, such as an aqueous solution of sodium hydroxide, sodium carbonate, potassium hydroxide or ammonia which can neutralize the free carboxylic acid in the coated film and render it water-soluble. The copper foil portion (the non-circuit portion) exposed on the base board as a result of the developing treatment is removed by a usual etching treatment using a solution of ferric chloride, for example. Thereafter, the exposed film on the circuit pattern is also removed by



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dissolving with a chlorine-containing solvent such as trichloroethylene or an alkali having a pH of at least 12 such as sodium hydroxide or potassium hydroxide to form a printed circuit on the base board (col. 10, line 61 through col. 11, line 12).

2. The following references are considered pertinent to the Applicant disclosure include Neis et al. (U. S. Patent 6,005,056) and Fujiwara et al. (JP 10-253815) are shown on the Notice of References Cited Form (PTO-892).

Neis discloses an acrylic copolymer modified in such a manner to allow its use, for example, for the production of coating compositions which, as compared to corresponding coating compositions made of unmodified acrylic copolymers, are characterized by higher gloss and higher resistance to chemicals as well as a weathering resistance adapted to the requirements set on clear coats in the motorcar industry (col. 1, lines 16-23).

The modified acrylic copolymers can be obtained by reacting an epoxy groups-containing acrylic copolymer, having more than one epoxy group per average molecular weight with the claimed modifying agents at elevated temperature, e.g. from 60 to 200<sup>0</sup> C, preferably from 120 to 170<sup>0</sup>C. The reaction can be conducted in the melt or in the presence of organic solvents, such as usually used in the manufacture of paints or resins, e.g. alcohols, e.g., methoxypropanol, butanol, aromatic hydrocarbons, e.g. xylol, crude oil distillates comprising mainly alkylbenzenes, esters, e.g. butyl acetate, methoxypropyl acetate, ketones, e.g. butanone, methylisobutyl ketone, and mixtures thereof. If desired, conventional catalysts can likewise be used for the catalysis of the epoxy/carboxy reaction, e.g. alkali metal hydroxides, e.g. lithium hydroxide

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monohydrate, **tertiary amines**, e.g. triethylamine, N,N-benzylmethylaniline, **triethylbenzyl ammonium chloride**, benzyltrimethyl ammonium hydroxide, also mixtures of different catalysts, in general in an amount of from 0.1 to 2% by weight, based on the total amount of the components (col. 1, line 64 through col. 2, line 16).

Fujiwara discloses a photopolymerization composition for a color filter, which contains binder resin, a compound having at least one double bond of an ethylene unsaturated bond, a photopolymerization initiator system, a color material and a solvent. Furthermore, the photopolymerization initiator system is composed so as to contain at least one type selected from a **multifunctional thiol compound**, a biimidazole compound, titanoxen compound, a triazine compound, and an oxadiazole compound. This color filter photopolymerization composition has high sensitivity, a high development function, a high resolving function, and high shelf life stability, and in particular suitable for forming a black matrix of high accuracy having a high shading function, and further provide a color filter having high accuracy and ensuring freedom from bleeding (abstract).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL M. BERNSTEIN whose telephone number is (571)272-2411. The examiner can normally be reached on M-Th 8-6:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael M. Bernshteyn/  
Examiner, Art Unit 1796

/M. M. B./  
Examiner, Art Unit 1796

/David Wu/  
Supervisory Patent Examiner, Art Unit 1796